EASTMAN PLUS-X Negative Film 5231™ / 7231™

DESCRIPTION

The speed and grain characteristics of EASTMAN PLUS-X Negative Film 5231 (35 mm) and 7231 (16 mm) make it well-suited for general motion picture production—both outdoors and in the studio. These film characteristics provide an excellent balance between the maximum desirable speed for general production work and a fine-grain negative for that speed. The speed of this panchromatic film permits the use of small apertures, thus allowing good depth of field. The film is also widely used for making composite projection background scenes.

BASE

EASTMAN PLUS-X Negative Film has a gray acetate safety base.

DARKROOM RECOMMENDATIONS

Handle unprocessed film in total darkness. If necessary, you can use a safelight *for a few seconds only* after developing is 50 percent complete. Use a safelight equipped with a 15-watt bulb and a KODAK Safelight Filter No. 3 / dark green. Keep the safelight at least 4 feet (1.2 metres) from the film.

STORAGE

Store *unexposed film* at 13˚C (55˚F) or lower. Process *exposed film* promptly. Store *processed film* at 21˚C (70˚F) or lower at a relative humidity of 40 to 50 percent for normal commercial storage. For more information on long-term storage, see KODAK Publications No. H-1, *KODAK Motion Picture Film,* and No. H-23, *The Book of Film Care.*

EXPOSURE INDEX/DIN

(For development to a gamma of 0.65 to 0.70.)
Daylight—80/20
Tungsten (3200 K)—64/19
Use these indexes with incident- or reflected-light exposure meters and cameras marked for ISO or ASA speeds or exposure indexes. These indexes apply for meter readings of average subjects made from the camera position or for readings made from a gray card of 18-percent reflectance held close to and in front of the subject. For unusually light- or dark-colored subjects, decrease or increase the exposure indicated by the meter accordingly.

EXPOSURE TABLE FOR TUNGSTEN LIGHT

At 24 frames per second (fps), 170˚ shutter opening:

Lens Aperture	***f*1.4**	***f*2**	***f*2.8**	***f*4**	***f*5.6**	***f*8**	***f*11**
Footcandles required *	40	80	160	320	640	1250	2500

* At 18 fps, use ¾ of the footcandles (fc) shown.

FILTER FACTORS

KODAK WRATTEN Filter No.	**3**	**8**	**12**	**15**	**21**	**23a**	**25**	**29**	**96***
Filter Factor for Daylight	1.5	2.0	2.5	3.0	3.5	5.0	8.0	25	8.0

* For use in bright sunlight to reduce the exposure without modifying color rendering or depth of field. This neutral density filter No. 96 with a density of 0.9 reduces the exposure.

RECIPROCITY

You do not need to make any filter corrections or exposure adjustments for exposure times from 1/10,000 to 1/10 second. At an exposure time of 1 second, increase exposure by ½ stop.

PROCESSING

The following starting-point recommendations are for a typical continuous-strand processing machine. See KODAK Publication H-24, *Manual for Processing KODAK Motion Picture Films,* Module 1, for more information on solution formulas for machine processing.

Processing Step	Temperature °C (°F)	Time (min:sec)	Replenishment Rate (mL per 100 ft)	
			35 mm	16 mm
KODAK Developer D-96*	21 ± 0.3 (70 ± 0.5)	Approx 5:00†	1,250 (D-96R)	625 (D-96R)
Stop Rinse‡	21 ± 1 (70 ± 2)	0:50	12,000	6,000
KODAK Fixing Bath F-5*	21 ± 1 (70 ± 2)	6:00	850	425
Countercurrent Wash (3 stages)	21 ± 1 (70 ± 2)	10:00	12,000	6,000
Dry§	35 (95)	—	—	—

* Agitation in the developer and fixing bath should be by recirculation through submerged spray jets that impinge on the film strands.

† Develop to recommended control gamma of 0.65 to 0.70 calculated using Status M densitometry (blue).

‡ Fixer-laden water from wash tank, pH about 6.

§ Drying depends on many factors such as air temperature, humidity, volume and rate of air flow, flow distribution pattern, final squeegeeing, etc. In a typical motion-picture film drying cabinet with air at about 35°C (95°F) and 40- to 50-percent relative humidity (RH), satisfactory drying will require 15 to 20 minutes. Film leaving the drying cabinet when it has reached room temperature should be at equilibrium with room air at approximately 50-percent RH.

IDENTIFICATION

After processing, the product code numbers 5231 or 7231, emulsion and roll number identification, KEYKODE Numbers, and internal product symbol (H) are visible along the length of the film.

IMAGE STRUCTURE

The modulation-transfer curves, the diffuse rms granularity, and the resolving power data were generated from samples of 5231 Film exposed with tungsten light and processed as recommended in KODAK Developer D-96. For more information on image-structure characteristics, see KODAK Publication No. H-1, *EASTMAN Motion Picture Film.*

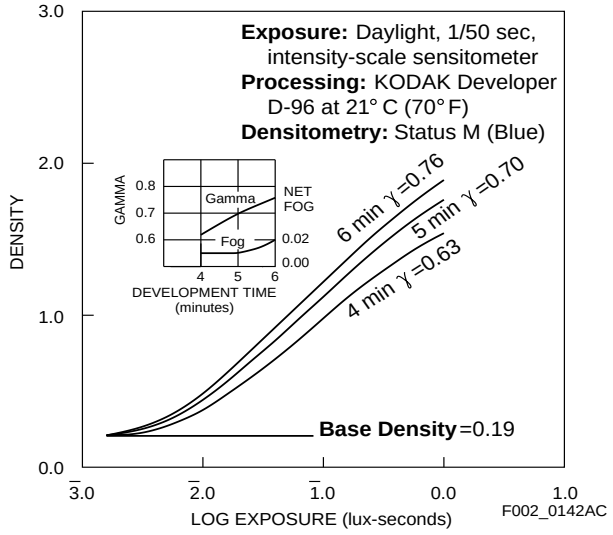
Diffuse RMS Granularity* 10

Resolving Power†	TOC 1.6:1	32 lines/mm
	TOC 1000:1	100 lines/mm

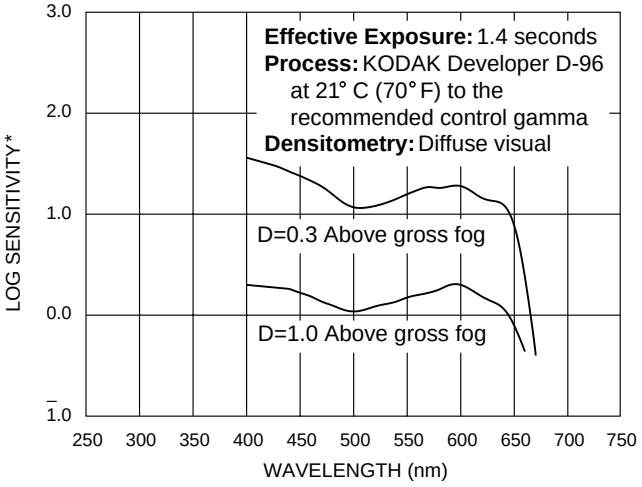
* Read at a net diffuse visual density of 1.0, using a 48-micrometer aperture.

† Determined according to a method similar to the one described in ISO 6328-1982, *Photography—Photographic Materials—Determination of ISO Resolving Power.*

Sensitometric Curves

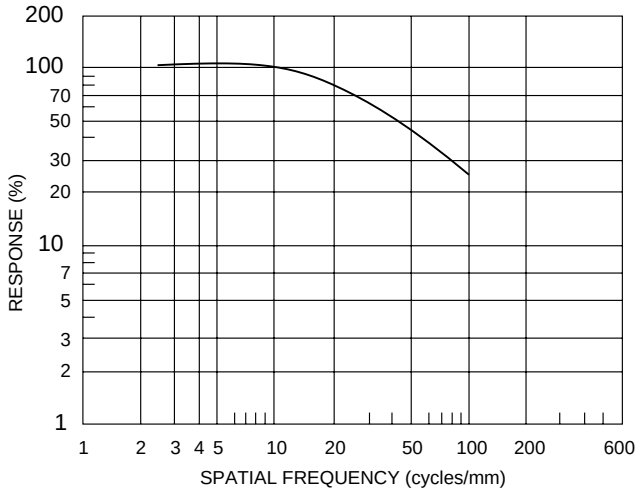


Spectral-Sensitivity Curves



*Sensitivity = reciprocal of exposure (ergs/cm^2) required to produce specified density

Modulation-Transfer Curve



Notice: While the data presented are typical of production coatings, they do not represent standards which must be met by Kodak. Varying storage, exposure, and processing conditions will affect results. The company reserves the right to change and improve product character- istics at any time.

These photographic modulation-transfer values were determined by using a method similar to the one described in ANSI Standard PH2.39-1977(R1990). The film was exposed with the specified illuminant to spatially varying sinusoidal test patterns having an aerial image modulation of a nominal 60 percent at the image plane, with processing as indicated. In most cases, these photographic modulation-transfer values are influenced by development-adjacency effects and are not equivalent to the true optical modulation-transfer curve of the emulsion layer in the particular photographic product.

AVAILABLE ROLL LENGTHS

For information on film roll lengths, check Kodak's *Professional Motion Imaging Price Catalog* or see a Kodak sales representative in your country.

KODAK LOCATIONS

FOR DIRECT ORDERING IN THE UNITED STATES:
1-800-621-FILM

ATLANTA, GEORGIA

4 Concourse Parkway
Suite 300
Atlanta, Georgia 30328-6105
Information: 800-800-8398

CHICAGO, ILLINOIS

815 West Van Buren, Suite 320
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Information: 312-492-1423

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Hollywood, California 90038-1203
Information: 323-464-6131

NEW YORK, NEW YORK

360 West 31st Street
New York, New York 10001-2727
Information: 212-631-3450

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http://www.kodak.com/go/motion

Professional
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